

5.1 Text

The most important program on any computer is the operating system or OS. The OS is a large program made up of many smaller programs. It controls how the CPU communicates with other hardware components. It also makes computers easier to operate by people who don't understand programming languages. In other words, operating systems make computer users friendly.

Operating systems are normally unique to their manufacturers and the hardware in which they are run. Generally, when a new computer system is installed, operational software suitable to that hardware is purchased. Users want reliable operational software that can effectively support their processing activities. Though operational software varies with manufacturers, it has similar characteristics.^[1] Modern hardware, because of its sophistication, requires that operating systems meet certain specific standards. For example, considering the present state of the field, an operating system must support some form of online processing.

The operating system is the system software that manages and controls the activities of the computer. It supervises the operation of the CPU, controls input, output, and storage activities; and provides various support services. It can be visualized as the chief manager of the computer system. The operating system determines which computer resources will be used for solving which problems and the order in which they will be used.^[2]

The operating system has some principal functions:

- ◆ Allocating and assigning system resources.

A master control program called a supervisor, executive or monitor oversees computer operations and coordinates all of the computer's work. The supervisor, which remains in primary storage, brings other programs from secondary storage to primary storage when they are needed. As each program is activated, the supervisor transfers control to that program. Once the program ends, control returns to the supervisor. A command language translator controls the assignment of system resources. The command language translator reads special instructions to the operating system that contain specifications for retrieving, saving, deleting, copying, or moving files; selecting input/output devices; selecting programming languages and applications programs; and performing other processing requirements for a particular application. These instructions are called command language.

- ◆ Scheduling the use of resources and computer jobs.

A very important responsibility of any operational software is the scheduling of jobs to be handled by a computer system. This is one of the main tasks of the job management function. Thousands of pieces of work can be going on in a computer at the same time. The operating system decides when to schedule them as computer jobs are unnecessarily performed in the order in which they are submitted. For example, payroll or online order processing may have a higher priority than other kinds of work. Other processing jobs, such as software program testing, would have to wait until these jobs were finished or left enough computer resources free to accommodate them. The operating system coordinates scheduling in various areas of the computer so that different parts of different jobs can be worked on simultaneously. For example, while some programs are executing, the operating system is also scheduling the use of input and output devices.

- ◆ Monitoring computer system activities.

The operating system is also responsible for keeping track of the activities in the computer system. It maintains logs of job operations, notifying end users or computer operators of any abnormal terminations or error conditions. It also terminates programs that run longer than the maximum time allowed. Operating system software may also contain security monitoring features, such as recording who has logged on and off the system, what programs they have run, and unauthorized attempts to access the system.

- ◆ Control of I/O operations.

Allocation of a system's resources is closely tied to the operational software's control of I/O operations. As access is often necessary to a particular device before I/O operations may begin, the operating system must coordinate I/O operations and the devices on which they are performed. In effect, it sets up a directory of programs undergoing execution and the devices they must use in completing I/O operations.

To facilitate execution of I/O operations, most operating systems have a standard set of control instructions to handle the processing of all input and output instructions.^[3] These standard instructions, referred to as the input/output control system (IOCS), are an integral part of most operating systems. They simplify the means by which all programs being processed may undertake I/O operations. The controlling software calls on the IOCS software to actually complete the I/O operation. Considering the level of I/O activity in most programs, the IOCS instructions are extremely vital.

Within the broad family of operating systems, there are generally four types, categorized on the types of computers they control and the sort of applications they support.

- ◆ Real-time operating system.

Real-time operating systems are used to control machinery, scientific instruments and industrial systems. A very important part of a real-time operating system is managing the resources of the computer so that a particular operation executes in precisely the same amount of time every time it occurs.

- ◆ Single-user, single-task operating system.

As the name implies, this operating system is designed for one user to effectively do one thing at a time. The Palm OS for Palm handheld computers is a good example of a modern single-user, single-task operating system.

- ◆ Single-user, multi-tasking operating system.

This is the type of operating system most people use on their desktop and laptop computers today.

Microsoft's Windows and Apple's Mac OS platforms are both examples of single-user, multi-tasking operating systems that will let a single user for a Windows to edit a text in a word processor while downloading a file from the Internet while printing the text of an E-mail message.^[4]

◆ Multi-user operating system.

A multi-user operating system allows many different users to take advantage of one computer's resources simultaneously. The operating system must make sure that the requirements of the various users are balanced, and that each of the programs they are using has sufficient and separate resources so that a problem with one user doesn't affect the entire community of users.^[5] UNIX, VMS and mainframe operating systems, such as MVS, are examples of multi-user operating systems.

Operating systems are constantly being improved or upgraded as technology advances. Upgrading an operating system can have several advantages, such as simplifying tasks and navigation. However, there can be disadvantages, too. Many older programs would no longer run within the new operating system. By far the most popular microcomputer operating system is Microsoft's Windows. Windows is custom-made to run with Intel CPU and Intel-compatible CPUs, such as the Pentium IV.

Keywords

activate	使活动, 起动	precisely	准确地, 清楚地
assignment	分配, 指定	principal	主要的, 重要的
categorize	把……分类	responsible	有责任的
community	团体, 共同组织	retrieve	检索, 恢复
compatible	相容的, 兼容的	schedule	程序表, 进度, 计划
effectively	有效地, 实质上地	separate	分离, 离开, 隔开
extremely	极端地, 非常地	termination	末端, 终点
navigation	导航	undergo	经受, 经历
notify	通知, 通告	undertake	承担, 承办
oversee	监督, 监视	vital	重大的, 紧要的

Notes

[1] Though operational software varies with manufacturers, it has similar characteristics.

译文: 尽管各厂家的操作系统软件各不相同, 但特性都是相似的。

说明: 本句的 Though 引导让步状语从句。

[2] The operating system determines which computer resources will be used for solving which problems and the order in which they will be used.

译文: 操作系统决定调用解决某个问题所需要的计算机资源及资源的使用顺序。

说明: 本句的 which 引导宾语从句。

[3] To facilitate execution of I/O operations, most operating systems have a standard set of control instructions to handle the processing of all input and output instructions.

译文: 为便于实施 I/O 的操作, 大多数操作系统都有一套标准的控制指令集来处理所有输入输出指令。

说明: 本句的 To facilitate execution of I/O operations 是目的状语, to handle the processing of all input and output instructions 作宾语补足语。

- [4] Microsoft's Windows and Apple's Mac OS platforms are both examples of single-user, multi-tasking operating systems that will let a single user for a Windows to edit a text in a word processor while downloading a file from the Internet while printing the text of an E-mail message.

译文：微软公司的 Windows 平台和苹果公司的 Mac OS 平台都是单用户、多任务操作系统的例子。

例如，Windows 操作系统用户就完全可能做到一边从互联网上下载文件，一边打印电子邮件的信息，一边还在用文字处理器编辑文本。

说明：这是一个长句，可以拆成两句。其中 both examples 作表语，“single-user, multi-tasking operating systems”作表语的定语，由 that 引导定语从句，修饰“single-user, multi-tasking operating systems”。

- [5] The operating system must make sure that the requirements of the various users are balanced, and that each of the programs they are using has sufficient and separate resources so that a problem with one user doesn't affect the entire community of users.

译文：多用户操作系统必须保证不同用户的需求的平衡，每一个用户所使用的程序有独立的足够的资源，这样一个用户的问题不会影响到整个用户群体。

说明：本句有两个并列的由 that 引导的宾语从句，so that 引导的是目的状语从句。

5.2 Reading Material 1: Windows Vista

Windows Vista is the latest generation of Microsoft's operating system. It provides several enhancements over its direct predecessor, Windows XP, Service Pack 2. As soon as you start up your computer and log into Windows, you will notice a difference. A new Start menu, new desktop backgrounds, and even the new Sidebar that docks on the right side of your screen will tell you that you are experiencing something new. Then go ahead and click the new Start menu button and navigate the menus to launch a program. No longer does your screen fill with multiple layers of menus that reach to the edge of your screen and back. Instead, each time you drill down in a menu, it overlays the previous menu to make it easier to find the program you want.

Other new features include new programs (such as Windows Calendar, Windows Photo Gallery, Windows Media Center, and Windows Fax and Scan), handy networking tools (the Network and Sharing Center, for example), a redesigned Control Panel, and many more advancements.

As Microsoft's newest operating system, Vista has introduced “Life Immersion” concept for the first time, namely, it integrates many human factors in the system and everything is people-oriented, causing the operating system to close to the user as best as possible, to understand user's feeling, and to make convenience for the user.

Vista's minimum system requirements are significant but still relatively modest. They consist of a “modern” 800MHz processor, 512MB of RAM and a 20GB hard drive. Systems that meet these criteria can run Windows Vista basic and rated as Windows Vista “Capable” by Microsoft.

Microsoft assures you that Windows Vista will bring transparency to your world, so you can more safety and confidently rely on your PC. Get more lively multimedia experience with dynamic audio-video output, music and TV, exclusively on your Windows Vista-based PC.

As far as security is concerned, the older versions of Windows, had a lot of security problems. It is the hackers who invade the system, sitting miles away from the system, and take the data that they need, such

as personal information, banking details, that one might have stored in the computer. The default browser Internet Explorer for Windows Vista has been upgraded to 7.0. It contains a lot of security features, like protected mode browsing, antiphishing, outbound and inbound firewall, standard user account functionality, user account control, windows defender, and parental control.

Windows Vista provides new amazing graphics functions. With Windows Vista, Microsoft has surpassed Mac OS in terms of graphics. It is the first time that Microsoft offers a great deal of high-quality graphics including 3D effects. This will help to boost programs meant for 3D games.

In the field of wireless networking function, one will see much more changes in the final release of Windows Vista. In Windows Vista, one can save the wireless connection setting and also one can name it. One can try to reconnect using these settings.

Windows Vista Home Premium is the preferred edition for home desktop and mobile PCs. It is the edition that delivers more ease of use, security, and entertainment to your PC at home and on the go. It includes Windows Media Center, and that makes it easier to enjoy your digital photos, TV and movies, and music.

With Windows Aero, you will experience dynamic reflections, smooth-gliding animations, transparent glass-like menu bars, and the ability to switch between your open windows in a new three-dimensional layout. Instant desktop search capabilities and new ways to organize your information mean that you can instantly find and use the E-mails, documents, photos, music, and other information you want. Windows Defender helps automatically safeguard your PC against pop-ups, slow performance, and security threats caused by spyware and other unwanted software.

Windows Vista Business is the first edition of Windows designed specifically to meet the needs of small businesses. You will spend less time on technology support-related issues—so you can spend more time making your business successful. You can help your business to work more efficiently with the improved, simple-to-use interface, which helps you find the information you need quickly and easily, on a PC or on the Web. With powerful new safety features, you are in control and can protect the key information that is important to your business and that builds the trust of your customers.

Keywords

antiphishing	反钓鱼软件	gallery	画廊, 陈列室
boost	帮助, 促进, 提高	immersion	沉浸, 浸没
calendar	日历	invade	侵入, 打扰
confidently	确信地, 自信地	outbound	跳出, 外出的
drill	操作, 操练	overlay	覆盖
enhancement	增强, 增值, 提高	transparency	透明度, 透明性
exclusively	除外的, 专有的	wireless	无线的

5.3 Reading Material 2: Dual-core Computing

Dual-core refers to a CPU that includes two complete execution cores. In a dual-core configuration, an integrated circuit contains two computer processors and their caches and cache controllers. Usually, the two identical processors are manufactured so they reside side-by-side on the same die, each with its own path to

the system front-side bus.

A dual-core processor has many advantages especially for those looking to boost their system's multitasking computing power. Dual-core processors provide two complete execution cores instead of one, each with an independent interface to the front-side bus. Since each core has its own cache, the operating system has sufficient resources to handle intensive tasks in parallel, which provides a noticeable improvement to multitasking.

Complete optimization for the dual-core processor requires both the operating system and applications running on the computer to support a technology called thread-level parallelism, or TLP. Thread-level parallelism is the part of the operating system or application that runs multiple threads simultaneously, where threads refer to the part of a program that can execute independently of other parts.

Even without a multithread-enabled application, you will still see benefits of dual-core processors if you are running an operating system that support TLP. For example, if you have Microsoft Windows XP, you could have your Internet browser open along with a virus scanner running in the background, while using Windows Media Player to stream your favorite radio station and the dual-core processor will handle the multiple threads of these programs running simultaneously with an increase in performance and efficiency.

Today Windows XP and hundreds of applications already support multithread technology, especially applications that are used for editing and creating music files, videos and graphics because types of programs need to perform operations in parallel. As dual-core technology becomes more common in homes and the workplace, you can expect to see more applications support thread-level parallelism.

Software benefits from dual-core architectures where code can be executed in parallel. Under most common operating systems this requires code to execute in separate threads. Each application running on a system runs in its own thread so multiple applications will benefit from dual-core architectures. Each application may also have multiple threads but must be specifically written to do so. Operating system software also tends to run many threads as a part of its normal operation. Running virtual machines will benefit from adoption of dual-core architectures since each virtual machine runs independently of others and can be executed in parallel.

Keywords

cache	高速缓冲存储器	optimization	最优化
favorite	中意的, 喜欢的	parallelism	并行性
intensive	加强的, 集中的	thread	线程
multitasking	多任务	virtual	虚拟的
noticeable	显著的, 引人注意的	workplace	工作场所

5.4 计算机专业英语中长句的运用

由于科学的严谨性, 专业英语中常常出现许多长句。长句主要是由于修饰语多、并列成分多及语言结构层次多等因素造成的, 如名词后面的定语短语或定语从句, 以及动词后面或句首的介词短语或状语从句。这些修饰成分可以一个套一个地连用(包孕结构), 形成长句结构。显然, 英语的一

句话可以表达好几层意思,而汉语习惯用一个小句表达一层意思,一般好几层意思要通过几个小句来表达。在专业文章中,长句往往是对技术的关键部分的叙述,翻译得不恰当就会造成整个段落甚至通篇文章都不清楚。

对于长句的翻译而言,一遍看不出句子的意思,就多看几遍,在这个过程中步步深入。首先,弄清楚句型、句种、结构和各成分之间的关系,逐渐推进;然后,纵观全局,确切地把握句子所表达的意思。从全局到局部,分清句子的整体结构;再从局部到总体,深入把握句子的细节。

通常分析长句时采用的方法如下。

- ◆ 找出全句的基本语法成分,即主语、谓语和宾语,从整体上把握句子的结构。
- ◆ 找出句子中所有的谓语结构、非谓语动词、介词短语和从句的引导词等。
- ◆ 分析从句和短语的功能,即是否为主语从句、宾语从句、表语从句等,若是状语从句,则分析它是属于时间状语从句、原因状语从句、条件状语从句、目的状语从句、地点状语从句、让步状语从句、方式状语从句、结果状语从句,还是比较状语从句。
- ◆ 分析词、短语和从句之间的相互关系,如定语从句修饰的先行词是哪一个等。
- ◆ 注意分析句子中是否有固定词组或固定搭配。
- ◆ 注意插入语等其他成分。

在英语长句的阅读和翻译过程中,必须清楚句子的逻辑结构、层次关系和所用的语体。常用的翻译方法有以下几种。

1. 顺序法

当英语长句的内容叙述层次与汉语基本一致时,或者英语长句中所描述的一连串动作是按时间顺序安排的,可以按照英语原文的顺序翻译成汉语。

例 1: The close-loop system has a control unit which gets information from a sensing element, compares the real state with that required by the program and, when there is a different between the two, makes the necessary adjustment to the control element so that the desired state is maintained.

译文: 闭环系统有一个控制单元,该单元从传感器获得信息,把真实值和程序的预定值进行比较,当两者有区别时,就对控制器作出必要的调整,从而保持预定值。

例 2: Being able to receive information from any one of a large number of separate places, carry out the necessary calculations and give the answer or order to one or more of the same number of places scattered around a plant in a minute or two, or even in a few seconds, computers are ideal for automatic control in process industry.

译文: 由于计算机能从工厂大量分散的任何地方获取信息进行必要的运算,并在一两分钟甚至几秒钟内向分散在工厂各处的一处或多处提供响应或发出指令,因此它对加工工业的自动控制是非常理想的。

例 3: Personal computer-based office automation software has become an indispensable part of electron management in many countries. Word processing programs have replaced type-writers; spreadsheet programs have replaced ledger books; database programs have replaced paper-based electoral rolls, inventories and staff lists; personal organizer programs have replaced paper diaries; and so on.

译文: 个人计算机办公自动化软件在许多国家已经成为电子管理不可缺少的组成部分。文字处理程序取代了打字机;电子表格取代了账簿;数据库取代了传统的纸选票、库存品和职员列表;个人管理程序取代了纸质日记簿等。

2. 逆序法

所谓逆序法，就是从长句的后面或中间译起，把长句的开头放在译文的结尾。这是由于英语和汉语的表达习惯不同：英语习惯于用前置性陈述，先结果后原因；而汉语习惯则相反，一般先原因后结果，层层递进，最后综合。当遇到这些表达次序与汉语表达习惯不同的长句时，就要采用逆序法。

例 1: Instead of paying someone to manually enter reams of data into the computer, you can use a scanner to automatically convert the same information to digital files using OCR (optical character recognition) software.

译文: 只要在使用扫描仪的过程中借助于光学字符识别软件就可以将信息转换成数字文件的形式，从而代替人们手工将大量数据输入到计算机中去的过程。

例 2: In order to assist users to name files consistently, and, importantly, to allow the original creator and other users to find those files again, it is useful to establish naming conventions.

译文: 为了帮助用户统一地命名文件，重要的是使最初的创建者和其他用户能再一次找到那些文件，建立命名公约是很必要的。

3. 分句法

有时长句中主语或主句与修饰词的关系并不十分密切，翻译时可以按照汉语多用短句的习惯，把长句的从句或短语化成句子，分开来叙述。而有时英语长句包含多层意思，而汉语习惯于一个小句表达一层意思。为了使行文简洁，翻译时可把长句中的从句或介词短语分开叙述，顺序基本不变，保持前后的连贯。翻译时为了使语意连贯，有时需要适当增加词语。

例 1: The structure design itself includes two different tasks, the design of the structure, in which the sizes and locations of the main members are settled, and the analysis of this structure by mathematical or graphical methods or both, to work out how the loads pass through the structure with the particular members chosen.

译文: 结构设计包括两项不同的任务：一是结构设计，确定主要构件的尺寸和位置；二是用数学方法或图解方法或二者兼用进行结构分析，以便在构件选定后计算出各载荷通过结构的情况。

例 2: The loads a structure is subjected to are divided into dead loads, which include the weights of all the parts of the structure, and live loads, which are due to the weights of people, movable equipment, etc..

译文: 一个结构受到的载荷可以分为静载和动载两类。静载包括该结构各部分的重量；动载则是由于人和可移动设备等的重量而引起的载荷。

例 3: Television, it is often said, keeps one informed about current events, allow one to follow the latest developments in science and politics, and offers an endless series of programs which are both instructive and entertaining.

译文: 人们常说，通过电视可以了解时事，掌握科学和政治的最新动态。从电视里还可以看到层出不穷、既有教育意义又有娱乐性的系列节目。

4. 综合法

当一些长句单纯采用上述任何一种方法翻译都不准确时，就需要仔细分析，或者按照时间先后，或者按照逻辑顺序，顺逆结合，主次分明地对全句进行综合处理。

例 1: Noise can be unpleasant to live even several miles from an aerodrome; is you think what it must be like to share the deck of a ship with several squadrons of jet aircraft, you will realize that a modern navy is a good place to study noise.

译文: 噪声甚至会使住在远离飞机场几英里的人感到不适。如果你能体会出站在甲板上的几个

中队喷气式飞机中间是什么滋味的话, 那你就会意识到现代海军是研究噪声的理想场所。

例 2: Modern scientific and technical books, especially textbooks, require revision at short intervals if their authors wish to keep pace with new ideas, observations and discoveries.

译文: 现代科技书籍, 特别是教科书, 如果作者希望书中内容与新见解、新观察、新发现保持一致, 就应该在较短的时间内将内容重新修改。

5.5 Exercises

1. Translate the following phrases.

Start menu
real-time operating system
job management
command language
system resource
primary storage
secondary storage
operating system
security problem
personal information
dual-core processor
multithread technology

2. Fill in the blanks with appropriate words or phrases.

- | | | | |
|---------------|----------------------|---------------------|---------------|
| a. components | b. control machinery | c. programs | d. technology |
| e. Windows | f. users | g. operating system | h. languages |

- (1) The _____ is also responsible for keeping track of the activities in the computer system.
- (2) Real-time operating systems are used to _____, scientific instruments and industrial systems.
- (3) A multi-user operating system allows many different _____ to take advantage of one computer's resources simultaneously.
- (4) The OS is a large program made up of many smaller _____.
- (5) The OS controls how the CPU communicates with other hardware _____.
- (6) The OS also makes computers easier to operate by people who don't understand programming _____.
- (7) Operating systems are constantly being improved or upgraded as _____ advances.
- (8) _____ is custom-made to run with Intel CPU and Intel-compatible CPUs, such as the Pentium IV.

3. Match the following terms to the appropriate definition.

- | | | |
|--------------------------|---------------|--------------|
| a. certificate authority | b. clock rate | c. crash |
| d. CRT | e. cache | f. directory |

- (1) It is the fundamental rate in cycles per second, measured in hertz, at which a computer performs its most

basic operations such as adding two numbers or transferring a value from one processor register to another.

- (2) A trusted third-party organization or company that issues digital certificates used to create digital signatures and public-private key pairs.
- (3) It is the display device used in most computer displays, video monitors, televisions and oscilloscopes. It was used in all television sets until the late 20th century.
- (4) It is a common term for a computer fault that brings down a software program or operating system. It is also refer to the failure of a hard disk drive.
- (5) A special high-speed storage mechanism. It can be either a reserved section of main memory or an independent high-speed storage device.
- (6) A major division on a hard drive used to divide and organize files.